April 15, 2004

Mr.Gerardo Rios
Air Division (Air-3)
Region IX
Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105-3901

Subject: Prevention of Significant Deterioration (PSD) Permit Application, Cabrillo Deepwater Port Project

Dear Mr. Rios:

Please find enclosed BHP Billiton LNG International Inc. (BHPB) Cabrillo Deepwater Port (Cabrillo Port) Notification of Application Revision to the Prevention Of Significant Deterioration (PSD) Air Quality Application submitted to the United States Coast Guard, the California State Lands Commission, and your agency on December 30, 2003. Specifically, the following documents are provided as part of this submittal:

- Summary of PSD Application revisions;
- Summary table comparing original construction emission estimates with revised estimates; and
- Revised Appendix A: Construction Operations Emissions Summary.

In addition, please find enclosed one (1) copy of the above-noted documents on CD.

If you have any questions regarding this submittal, please contact me at (805) 604-2795.

Yours sincerely,

Steven R. Meheen

BHP Billiton LNG International Inc.

Enclosures noted

Cabrillo Port Project
Revised Construction Emission Estimates

The Cabrillo Port Project has recently been revised with regard to construction activities related to the offshore pipeline configuration. Specifically, the project will consist of two parallel offshore pipelines. In addition, HDD operations will be conducted from onshore and equipment specifications and activity duration were refined for construction. These revisions are summarized in the attached revised Appendix A as follows:

- *Mooring construction activities* were reduced from 45 days to 24 days. Workboat main engine horsepower (hp) was increased from 3,750 to 8,500 hp. In addition the workboats were reduced from two boats to one boat. This reduced the total tons of NO_x from 76 tons to 25 tons for this activity.

- *Offshore pipe-lay activities* were reduced from 45 days to 35 days. Workboat main engine hp was increased from 3,750 to 7,200. In addition, the supply boats were reduced from four boats to one boat, while two boats were moved to support the onshore pipe-lay operation. This reduced the total tons of NO_x from 327 tons to 255 tons for this activity.

- *Onshore pipe-lay activities* were increased from 45 days to 60 days. In addition, two offshore support vessels were added to this activity. This increased the total tons of NO_x from 30 tons to 83 tons for this activity.

These construction emission estimate revisions have resulted in a ***reduction*** in tons of construction-related NO_x emissions of 71 tons and a ***net reduction*** in tons of all pollutants of 95 tons. A comparison of emissions presented in the PSD permit application and the current revisions is provided in the attached Summary Table.

Table 1
Revised Construction Emissions Comparison

PSD Application Submittal Emissions Estimates

Phase	Duration	NO_X	SO_X	CO	PM_{10}	VOC
	days	tons	tons	tons	tons	tons
Mooring	45	75.7	1.1	16.7	2.6	5.3
Offshore Pipelay	45	326.8	4.6	72.2	11.4	22.8
Onshore Pipelay	45	30.1	0.4	6.6	1.0	2.1
Totals:		**432.6**	**6.1**	**95.5**	**15.0**	**30.2**

Revised Emission Estimates (4/1/04)

Phase	Duration	NO_X	SO_X	CO	PM_{10}	VOC
	days	tons	tons	tons	tons	tons
Mooring	24	24.5	0.3	5.4	0.9	1.7
Offshore Pipelay	35	254.8	3.6	56.3	8.9	17.8
Onshore Pipelay	60	82.5	1.1	18.2	2.9	5.8
Totals:		**361.8**	**5.0**	**79.9**	**12.7**	**25.3**
Net Increase/ (Decrease):		**(70.8)**	**(1.1)**	**(15.6)**	**(2.3)**	**(4.9)**
Total Net Increase/ (Decrease):		**(94.7)**				

APPENDIX A
REGULATED AIR POLLUTANT EMISSIONS CALCULATIONS

Construction Operations Emissions Summary
April 1, 2004 Revisions

Table 1. Estimated Maximum Daily Construction Emissions

Phase	Duration	NO_X	SO_X	CO	PM_{10}	VOC
	days	lbs/day	lbs/day	lbs/day	lbs/day	lbs/day
Mooring	24	4,499	63	994	157	314
Offshore Pipelay	35	15,331	214	3,387	535	1,070
Onshore Pipelay	60	3,748	52	828	131	261

Table 2. Estimated Total Project Construction Emissions

Phase	Duration	NO_X	SO_X	CO	PM_{10}	VOC
	days	tons	tons	tons	tons	tons
Mooring	24	24.5	0.3	5.4	0.9	1.7
Offshore Pipelay	35	254.8	3.6	56.3	8.9	17.8
Onshore Pipelay	60	82.5	1.1	18.2	2.9	5.8

Mooring

Equipment Type	Number of Devices	Engine Rating BHP Each	Operation hrs/day	Average Load	Working Days	Power Output bhp-hr/day	NOX lbs/day	SOX lbs/day	CO lbs/day	PM10 lbs/day	ROC lbs/day	NOX lbs	SOX lbs	CO lbs	PM10 lbs	ROC lbs
AHTS #1 Mains	1	12,500	12	35%	20	52500	1216.98	16.98	268.87	42.45	84.91	24,340	340	5,377	849	1,698
AHTS #1 Bow Thruster	1	1,500	3	80%	20	3600	83.45	1.16	18.44	2.91	5.82	1,669	23	369	58	116
AHTS #1 Generators	1	2,000	12	50%	20	12000	278.17	3.88	61.46	9.70	19.41	5,563	78	1,229	194	388
AHTS #2 Mains	1	16,500	12	35%	4	69300	1606.42	22.42	354.91	56.04	112.08	6,426	90	1,420	224	448
AHTS #2 Bow Thruster	1	1,500	3	80%	4	3600	83.45	1.16	18.44	2.91	5.82	334	5	74	12	23
AHTS #2 Generators	1	2,000	12	50%	4	12000	278.17	3.88	61.46	9.70	19.41	1,113	16	246	39	78
Work Boat #3 Mains	1	8,500	12	35%	10	35700	827.55	11.55	182.83	28.87	57.74	8,275	115	1,828	289	577
Work Boat #3 Bow Thruster	1	1,000	3	80%	10	2400	55.63	0.78	12.29	1.94	3.88	556	8	123	19	39
Work Boat #3 Generators	1	500	12	50%	10	3000	69.54	0.97	15.36	2.43	4.85	695	10	154	24	49
TOTAL EMISSIONS, lbs							**4,499**	**63**	**994**	**157**	**314**	**48,971**	**683**	**10,819**	**1,708**	**3,417**

TOTAL EMISSIONS, tons	**24.5**	**0.3**	**5.4**	**0.9**	**1.7**

Emission Factors	Units	NOX	SOX	CO	PM10	ROC	Reference
Diesel	lb/BHP-hr	0.0232	0.0003	0.0051	0.0008	0.0016	SCAQMD CEQA Air Quality Handbook, Table A9-3-A, 37.1% efficiency, 0.05% S
Gasoline	lb/BHP-hr	0.0062	0.0003	0.2350	0.0003	0.0089	SCAQMD CEQA Air Quality Handbook, Table A9-3-A, 37.1% efficiency
Truck	grams/mile	13.050		1.390	0.280	0.480	CARB EMFAC 2001 (70 F, 50% RH, non-enhanced I/M, 35 mph)

Mooring Assumptions

#1 AHTS @ 16,000 Hp
#2 AHTS @ 20,000 Hp
#3 Work Boat, 10,000 Hp (riser installation vessel)
2x Barges to transport anchors and equipment (not powered)
Total Time = 24 days
Note: Total vessel-days equivalent to task estimates, multiple vessels used in some tasks, composite daily estimate is conservative for planned activities due to vessel overlap

Offshore Pipelay

Equipment Type	Number of Devices	Engine Rating BHP Each	Operation hrs/day	Average Load	Working Days	Power Output bhp-hr/day	NOX lbs/day	SOX lbs/day	CO lbs/day	PM10 lbs/day	ROC lbs/day	NOX lbs	SOX lbs	CO lbs	PM10 lbs	ROC lbs
Lorelay Pipe Ship	1	22,690	24	100%	35	544553	12623.07	176.14	2788.82	440.34	880.68	441,807	6,165	97,609	15,412	30,824
Supply Boat Mains	1	7,200	24	35%	25	60480	1401.96	19.56	309.74	48.91	97.81	35,049	489	7,743	1,223	2,445
Supply Boat Bow Thruster	1	1,200	6	80%	25	5760	133.52	1.86	29.50	4.66	9.32	3,338	47	737	116	233
Supply Boat Generators	1	4,050	24	50%	25	48600	1126.58	15.72	248.89	39.30	78.60	28,164	393	6,222	982	1,965
Large Crane (100 ton)	1	200	12	50%	25	1200	27.82	0.39	6.15	0.97	1.94	695	10	154	24	49
Small Crane (35 ton)	1	130	12	50%	25	780	18.08	0.25	3.99	0.63	1.26	452	6	100	16	32
TOTAL EMISSIONS, lbs							**15,331**	**214**	**3,387**	**535**	**1,070**	**509,506**	**7,109**	**112,565**	**17,773**	**35,547**

TOTAL EMISSIONS, tons	**254.8**	**3.6**	**56.3**	**8.9**	**17.8**

Emission Factors	Units	NOX	SOX	CO	PM10	ROC	Reference
Diesel	lb/BHP-hr	0.0232	0.0003	0.0051	0.0008	0.0016	SCAQMD CEQA Air Quality Handbook, Table A9-3-A, 37.1% efficiency, 0.05% S
Gasoline	lb/BHP-hr	0.0062	0.0003	0.2350	0.0003	0.0089	SCAQMD CEQA Air Quality Handbook, Table A9-3-A, 37.1% efficiency
Truck	grams/mile	13.050		1.390	0.280	0.480	CARB EMFAC 2001 (70 F, 50% RH, non-enhanced I/M, 35 mph)

Pipelay Assumptions

1x Dynamically positioned pipelay vessel "Lorelay", 22,690 average Hp
1x Supply boat, 12,450 total Hp (also provides welding power when needed)
4x Pipe barges to transport pipe and material offshore (not powered)
1x Crane (shore side), 100 ton capacity (pipe handling / loading), 200 Hp
1x Crane (shore side), 35 ton capacity (pipe handling / loading), 130 Hp
Total Time = 35 days

Lorelay Pipe Ship	Qty	Each KW	All KW	Avg Load	Total KW	Total HP
Bow Thruster, tunnel	2	2,600	5,200	35%	1,820	2,441
Bow Thruster, retractable	1	3,000	3,000	35%	1,050	1,408
Stern Thruster, propeller	1	6,000	6,000	35%	2,100	2,816
Stern Thruster, azimuth	2	3,000	6,000	35%	2,100	2,816
Stern Thruster, tunnel	1	1,000	1,000	35%	350	469
Generator Capacity, total	1	19,000	19,000	50%	9,500	12,740
					16,920	22,690

Onshore Pipelay

Equipment Type	Number of Devices	Engine Rating BHP Each	Operation hrs/day	Average Load	Working Days	Power Output bhp-hr/day	NOX lbs/day	SOX lbs/day	CO lbs/day	PM10 lbs/day	ROC lbs/day	NOX lbs	SOX lbs	CO lbs	PM10 lbs
Large Drilling Rig (onshore)	2	500	24	80%	60	19200	445.07	6.21	98.33	15.53	31.05	26,704	373	5,900	932
Mud Cleaner Generator	1	400	24	80%	60	7680	178.03	2.48	39.33	6.21	12.42	10,682	149	2,360	373
Mud Pumps	2	500	24	80%	60	19200	445.07	6.21	98.33	15.53	31.05	26,704	373	5,900	932
Fluid Handling Pumps	4	75	24	80%	60	5760	133.52	1.86	29.50	4.66	9.32	8,011	112	1,770	279
Track Backhoe	1	200	12	30%	60	720	16.69	0.23	3.69	0.58	1.16	1,001	14	221	35
All Terrain Forklift	1	100	12	30%	60	360	8.35	0.12	1.84	0.29	0.58	501	7	111	17
Light Towers	6	20	12	100%	60	1440	33.38	0.47	7.37	1.16	2.33	2,003	28	442	70
18 Wheeler Truck (mi/day)	120				60		3.45	0.00	0.37	0.07	0.13	207	-	22	4
Small Drilling Rig (offshore)	1	400	24	40%	60	3840	89.01	1.24	19.67	3.11	6.21	5,341	75	1,180	186
Exit Hole Barge Tug	1	6,000	24	20%	35	28800	667.60	9.32	147.49	23.29	46.58	23,366	326	5,162	815
Supply Boat Mains	1	7,200	24	20%	35	34560	801.12	11.18	176.99	27.95	55.89	28,039	391	6,195	978
Supply Boat Bow Thruster	1	1,200	6	15%	35	1080	25.04	0.35	5.53	0.87	1.75	876	12	194	31
Supply Boat Generators	1	4,050	24	40%	35	38880	901.26	12.58	199.12	31.44	62.88	31,544	440	6,969	1,100
TOTAL EMISSIONS, lbs							**3,748**	**52**	**828**	**131**	**261**	**164,979**	**2,299**	**36,425**	**5,752**

TOTAL EMISSIONS, tons	**82.5**	**1.1**	**18.2**	**2.9**

Emission Factors	Units	NOX	SOX	CO	PM10	ROC	Reference
Diesel	lb/BHP-hr	0.0232	0.0003	0.0051	0.0008	0.0016	SCAQMD CEQA Air Quality Handbook, Table A9-3-A, 37.1% efficiency, 0.05% S
Gasoline	lb/BHP-hr	0.0062	0.0003	0.2350	0.0003	0.0089	SCAQMD CEQA Air Quality Handbook, Table A9-3-A, 37.1% efficiency
Truck	grams/mile	13.050		1.390	0.280	0.480	CARB EMFAC 2001 (70 F, 50% RH, non-enhanced I/M, 35 mph)

Pipelay Assumptions

1x Large drilling rig (onshore) with auxiliaries, 2700 total Hp
1x Track backhoe, 200 Hp
1x All terrain forklift, 100 Hp
6x Light towers, 20 Hp each
2x 18 wheelers each traveling 60 miles/day during construction period
1x Small Drilling Rig (offshore), 400 Hp
4x Light towers, 20 Hp each
1x Tug for exit hole barge support, 6000 Hp
1x Supply boat, 12,450 total Hp (also provides welding power when needed)
4x Pipe barges to transport pipe and material offshore (not powered)
Total Time = 120 days

Onshore Pipelay

ROC lbs
1,863
745
1,863
559
70
35
140
8
373
1,630
1,956
61
2,201
11,503

5.8
